

<b>Report Documentation Page</b>			<i>Form Approved OMB No. 0704-0188</i>	
<p>Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.</p>				
1. REPORT DATE <b>30 SEP 2009</b>	2. REPORT TYPE <b>Annual</b>	3. DATES COVERED <b>00-00-2009 to 00-00-2009</b>		
4. TITLE AND SUBTITLE <b>Profiling Dissipation Measurements Using Xpods On Moored Profilers In Luzon Strait</b>			5a. CONTRACT NUMBER	
			5b. GRANT NUMBER	
			5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S)			5d. PROJECT NUMBER	
			5e. TASK NUMBER	
			5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) <b>Oregon State University,College of Oceanic &amp; Atmospheric Sciences,Corvallis,OR,97331</b>			8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)			10. SPONSOR/MONITOR'S ACRONYM(S)	
			11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT <b>Approved for public release; distribution unlimited</b>				
13. SUPPLEMENTARY NOTES <b>Code 1 only</b>				
14. ABSTRACT <b>The long-term goal of this program is to understand the physics of small-scale oceanic processes and how they affect the larger scales of ocean circulation. Ongoing studies within the Ocean Mixing Group at OSU emphasize observations, interaction with turbulence modelers and an aggressive program of sensor / instrumentation development and integration.</b>				
15. SUBJECT TERMS				
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT <b>Same as Report (SAR)</b>	18. NUMBER OF PAGES <b>2</b>
a. REPORT <b>unclassified</b>	b. ABSTRACT <b>unclassified</b>	c. THIS PAGE <b>unclassified</b>	19a. NAME OF RESPONSIBLE PERSON	

## Profiling Dissipation Measurements using $\chi$ pods on Moored Profilers in Luzon Strait

James N. Moum

Jonathan D. Nash

College of Oceanic & Atmospheric Sciences

Oregon State University

Corvallis, OR 97331-5503

ph: (541) 737-2553   fx: (541) 737-2064   email: [moum@coas.oregonstate.edu](mailto:moum@coas.oregonstate.edu)

<http://mixing.coas.oregonstate.edu/>

Award #: N00014-09-1-0280

### LONG-TERM GOALS

The long-term goal of this program is to understand the physics of small-scale oceanic processes and how they affect the larger scales of ocean circulation. Ongoing studies within the **Ocean Mixing Group** at OSU emphasize observations, interaction with turbulence modelers and an aggressive program of sensor / instrumentation development and integration.

### OBJECTIVES

The principal objectives of this project are to:

- quantify the energy losses to turbulent dissipation in the Luzon Strait in a systematic, comprehensive and extended way;
- quantify the spring-neap variation in these energy losses;
- obtain meaningful, long-term observations of the turbulent heat and momentum flux profiles in Luzon Strait, from which useful parameterizations can be derived;
- measure the seafloor pressure difference through the Strait associated with deepwater overflows.

### APPROACH

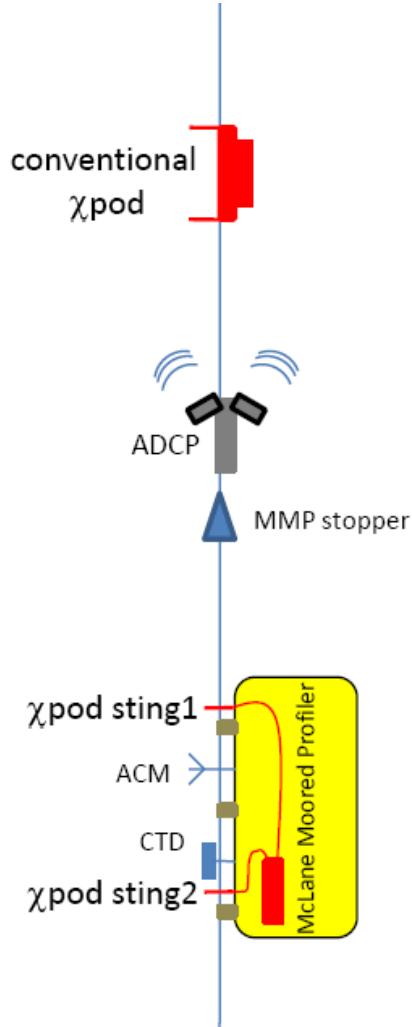
To accomplish these objectives, we will:

1. modify 1-2 McLane Moored Profilers MPs for direct and extended measurements of turbulence,
2. build additional fixed-point turbulence measurements to add to the MP moorings, and
3. contribute high-resolution seafloor pressure sensors for mooring-of-opportunity deployments.

## WORK COMPLETED

This project has just begun. Working together with engineers from the Applied Physics Lab at University of Washington, we are in the process of completing detailed engineering drawings of modifications to the MP and of new pressure cases required to house analog electronics, sensors, analog-to-digital conversion electronics and batteries.

Initial engineering tests are scheduled for December 2009 in Puget Sound. These tests will be conducted in coordination with an independent study on the form drag over Three Tree Point south of Seattle.



**Figure 1 – schematic of turbulence-resolving xpods on one (of 2) Moored Profilers. Additional xpods will be deployed above the upper stopper (50 m, shown) and below the bottom stopper (1500 m, not shown). These provide continuous time series at 50 and 1500 m to complement continuous profiles through the water column. ADCPs will be deployed nearby to measure flow speed variations at upper / lower xpods.**